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Claim 76 (twice amended) An isolated antigen comprising a molecular structure that is identifiable with an antibody probe produced by harvesting an antibody from antibody producing cells of a mammal that are at or close to an infection or lesion site within a short time after said mammal is challenged by infection with *Mycoplasma hyopneumoniae* at said infection or lesion site, said molecular structure being a native *Mycoplasma hyopneumoniae* antigen having an approximate molecular weight in kilodaltons (kD) of between 110 - 114, 90 - 94, 72 - 75, 52 - 54 or 46 - 48, or being a mutant, derivative or fragment of the native antigen that stimulates production of the antibody in the antibody producing cells, wherein if the molecular structure is the native antigen having the molecular weight between 72 - 75 kD, the molecular structure contains an N-terminal amino acid sequence comprising SEQ ID NO:12, and wherein if the molecular structure has a molecular weight between 46 - 48 kD, the molecular structure has an N-terminal amino acid sequence comprising SEQ ID NO:3.

Claim 86 (amended) A method for preparing a synthetic antigenic polypeptide against *Mycoplasma*, which method comprises

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(a) providing a cDNA library or genomic library derived from a sample of the *Mycoplasma*;

(b) providing an antibody probe produced by

(i) providing a biological sample taken a short time after a mammal has been challenged with the *Mycoplasma* or an extract comprising the *Mycoplasma* at an infection or lesion site, said sample being taken from the infection or lesion site or an area close to the

infection or lesion site;

- (ii) isolating antibody producing cells from the biological sample;
- (iii) culturing the isolated cells *in vitro* in a suitable culture medium; and
- (iv) harvesting the at least one antibody from said isolated cells;

G² (c) generating synthetic polypeptides from the cDNA library or genomic library;

(d) probing the synthetic polypeptides with the antibody probe to detect the synthetic antigenic polypeptide; and

(e) isolating the synthetic antigenic polypeptide detected thereby.

Claim 87 (amended) A method according to claim 86, wherein the at least one antibody is raised against an antigen from *Mycoplasma hyopneumoniae* or a related organism, said antigen being selected from the group of native *Mycoplasma* antigens having approximate molecular weights of 110 - 114, 90 - 94, 72 - 75, 52 - 54 and 46 - 48 kilodaltons (kD) or being a mutant, derivative or fragment of a native *Mycoplasma* antigen that stimulates production of the at least one antibody in said mammal.

Claim 93 (amended) An amino acid sequence encoded by a DNA fragment comprising SEQ ID NO:1 or a homolog thereof or a functional equivalent of said amino acid sequence.